

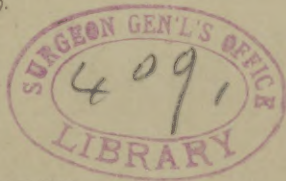
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THE EFFECT OF

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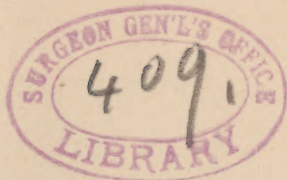
As shown by the Analysis of One Hundred
Recorded Cases.

BY
SAMUEL A. FISK, A.M., M.D.,
DENVER, COL.

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THE EFFECT OF THE CLIMATE OF COLORADO
UPON PHTHISIS PULMONALIS, AS SHOWN
BY THE ANALYSIS OF ONE HUNDRED
RECORDED CASES.¹

BY SAMUEL A. FISK, A.M., M.D., DENVER, COL.

FELLOW MEMBERS OF THE COLORADO STATE MEDICAL SOCIETY: — The time has come, which has been specified by the By-Laws and ordained by custom, for the Annual Address of your President, and it is my pleasure, as well as my duty, to comply with these demands.

For a long time the subject has been on my mind, and the selection of an appropriate theme has been a matter of considerable difficulty. On the one hand, I have been met by the decided objection in my own mind, to touching upon subjects that have already been so ably handled by my predecessors; and, on the other, by the desire of presenting something which would bear on its face some evidence of my own individual work and at the same time have a common interest for all.

With a view of meeting these requirements as well as I could, I have selected as the title of my address, "The Effect of the Climate of Colorado upon Phthisis Pulmonalis, as shown by the Analysis of One Hundred Recorded Cases."

In presenting this subject I feel that it should partake strongly of the flavor of having a common interest, for if there is any one thing in our surroundings that makes our work in our profession to differ from that of the thousands upon thousands of physicians, the country and world over, and which, moreover, is deserving of our closest attention, as men of some scien-

¹ President's Address before the Colorado State Medical Society, at Denver, June 19, 1889.

tific attainments, it is and should be the question of the effect of this climate upon the human economy in conditions of both health and disease. It is a vast theme, fraught with no little scientific interest, affording scope enough for the ambitions of any one, and material enough for the work of a lifetime. In its broadest bearing it embraces much larger considerations than the one to which I shall limit myself, and yet, up to the present time, we of the medical profession have emphasized especially the effects of our climate in producing an arrest or cure of the disease commonly called consumption, for it has been in this direction that its effects have been most pronounced and conspicuous.

As individuals, there are and have been members of this Society who have devoted time and study to the analysis of the climate and to its effects upon this disease, and their published articles have attracted the attention of the profession generally, and have had the effect of bringing invalids of this class here by the thousands, and have resulted in the saving of thousands of lives. But, in order to give such investigations the weight that must always come from the approval of a body like our own, and, moreover, to relieve them from the elements of the personal equation which an individual's writing must always bear, this Society voted last year to entrust a consideration of this question to a "Committee of Collective Investigation," which should have power to solicit reports from the individual members of this Society and collate the same. The committee began its labors early, outlined its policy clearly, and have labored zealously, but they are not able to render any report, largely from lack of support from our own members.

It does not seem to me that in this matter there is any blame to attach to any one, nor, on the other hand, any cause to abandon our idea. This, our first attempt,

should not be considered as a failure, nor should we be led to give over the project. It is one, it seems to me, which if carried out to its fulfilment, would stamp our body, in the minds of the profession the world over, as a really scientific body. Its results would be a real addition to medical knowledge to be quoted as often and spoken of as favorably as are the reports of the several investigation committees of the British Medical Association.

Let me, therefore, at this time and from this chair, urge upon you not to become disheartened, not to consider this first attempt as a failure, but rather to regard it as an experience, from which we are to profit, from which we are to devise other means by which the committee will meet with more hearty support from our members, and by which the members will find it easier to comply with the demands made upon them by your committee.

The object proposed is a mighty one, and the goal glorious. Let us push on to its achievement.

I, for one, made an attempt to comply with the request of your committee appointed a year ago, and started to collate my cases. It was not, however, until I undertook the matter that I had any comprehension of the amount of work involved, nor of the difficulty that would beset both a busy practitioner, in furnishing the data, and the committee in collating such data, if furnished. From my own experience I understand somewhat the difficulties that will beset us, for, as few as are the cases that I present as the basis of my conclusions, the task of getting them into shape is one that I doubt if I could have accomplished without the kindly aid of one of my medical students, whose services I wish to publicly acknowledge.

Out of this attempt on my part, and the understanding that the committee would be unable to make a report, grew the idea of presenting a summary of my

cases at this time. In doing so I am as painfully aware as any of you can be, of the deficiencies. I regret that the number of cases is not larger, and that the time of their being under observation is not longer. They are selected cases, and do not embrace my total of recorded cases, nor, unfortunately, does my list of recorded cases contain by any means, all of the cases I have had under observation, for unless I have seen the patients at my office where my record-book was at hand, I have not been apt to take notes. But, in presenting even these few cases, I am consoled with the thought that the one thousand cases quoted by Dr. Williams in his book on "Pulmonary Consumption" are selected from the records of a busy practice of a specialist in a large city, and cover a period of twenty-two years; that my own shortcomings, as regards numbers and the time during which they have been under observation, are such as, I trust, will be remedied as years go on; that, after all, some valuable truths may be gleaned from even one hundred cases carefully recorded and conscientiously analyzed; and that I am taking what might be called "a step in the right direction," as regards the handling of this subject by the physicians that compose our Society.

The cases are selected, not with reference to the results being favorable or unfavorable to our climate, but because I have been able to see them frequently enough to judge somewhat of the effects of our climate upon their trouble, and to follow the progress of their disease.

Inasmuch as my only aim is to show the effect of our climate upon this disease, pulmonary consumption, it is evident that I could call to my aid only such cases as I have been able to follow for some time, so as to know whether they were benefited or injured by a residence in our climate, and to point out, if I can, the elements in these cases which tended to produce the one or the other effect.

I am not able to follow the classification of Dr. Williams in tabulating my results, for his first broad class of "well" patients I prefer to class as "much improved." I have seen, and had under my care, patients who have been pronounced well, or at least they have told me that they have been pronounced well, by other physicians, — not in this country, however, — and been dismissed as well from sanatoria, in whom cough and expectoration still persisted, and in whom there have been pronounced physical signs.

I have preferred to classify my list as

(1) Much Improved. This includes those spoken of by Dr. Williams as being able to follow their occupations without any recurrence of their former symptoms, and others, who, though still carrying some evidences of their disease, are able to pursue their occupations without any serious inconvenience. In the broadest sense they have all been much improved by their residence in Colorado.

(2) A second class I have called, Somewhat Improved. Here I have placed those who have shown improvement, — but not up to the first class. It embraces some who, after making very considerable gains in this climate, have considered themselves able to return to their homes. Others, who are in the chrysalis state, in process of formation for the first class. And still others, who, though improved in their condition on arriving in Colorado, and who, though able to work have, nevertheless, to use precautions and limit their exertions (Dr. Williams's second class).

(3) The third class, are the few who have not done well here, largely, I think, through some imprudence of their own, but be that as it may, they are actually in a worse condition than when they arrived.

(4) Those who have died. My first class numbers 50 % of all cases; my second, 17 %; my third,

7 %, and my fourth, 26 %. If now we make the broad distinction in these cases between those who have been benefited and those who have not been benefited by coming to Colorado, we can class the first two divisions as one, and the last two as one. From this we learn that 67 % of my cases have been benefited, and 33 % of my cases have not been benefited by coming to Colorado. That is, that benefit may be expected in two out of three cases that come here — taking cases as they run. This is not an altogether fair statement of the case, either, for of those in the second half I can recall a good many instances where some imprudence has made all the difference between progress and retrogression, where I think it is fair to say that an arrest of the trouble was sacrificed to some imprudence, in no way attributable to climatic influence, and not to be regarded as an effect of climate, — such imprudence, I mean, as an excess in exercise as, for instance, a very long horseback ride, or a fishing excursion, pitching quoits, or imprudence in returning to the East when it was not advisable, or, pneumonia contracted from taking a Turkish bath. Many of these cases have occurred in persons, who up to that time, were gaining, and whose prospects were encouraging, but as the result of their imprudence fresh troubles were lighted up, hæmorrhages induced, and conditions brought about from which they have never rallied. These remarks apply to nearly every one of my third list, and fully nine in the fourth. So that while I am willing to let the statement go, as shown by my cases, that 67 % of invalids that come to this climate gain by so doing, and that 50 % make marked improvement, I yet think that these figures might be somewhat increased in favor of the good influence of our climate, if only all patients would act cautiously and with discretion, which, unfortunately, they won't; and so, as I am analyzing figures, some

results have to be classed as unfavorable to our climate, where in reality they are not.

Æx. — The question is often asked whether men or women do best in this climate. I do not know that my figures will tally with the results of other physicians in this matter, for I find that only fourteen of my cases were women. Of these fourteen, six died, and one got worse, making a percentage of 50 % who were not benefited. Whereas of the men, twenty died and six got worse, a percentage of only 30.2 % who were not benefited. Of the remaining seven women, who were benefited, I find that six are classed with the much benefited.

These figures would seem to show that men do better than women in securing an arrest of pulmonary trouble in Colorado, and that so far as women are concerned it is an even chance as to whether they are benefited or not by coming to this State. Even here it must be remembered, however, that with the percentage balancing, a showing of 50 % on the positive side is really stronger in moral force than the 50 % on the negative, for the question arises, what might have been the results in the case of the seven who were benefited here, had they *not* come to Colorado.

Undoubtedly most women feel the separation from home friends more keenly than most men, and are less able to stand the effects of change of surroundings and conditions, than most men; so that these forces operate more adversely in the case of women than of men, which may account, to some extent, for the ratio of percentages given above. Of the six women who died, five died within six months after coming to Colorado, and the remaining one in a year. Moreover, there are other factors operating adversely in the case of most women, of which I shall have occasion to speak presently, most noticeably imperfect digestion, poor appetite, constipation, and irritability of nerve

centres, all of which, in either men or women, are most potent factors for harm in cases of pulmonary consumption.

Age. — As regards the influence of age in affecting the results of a residence in Colorado on account of consumption, I find that, of my hundred cases,

3 cases were under		20 years of age.	
53	"	from 20-30	" "
32	"	" 30-40	" "
8	"	" 40-50	" "
4	"	" 50-55	" "

Of the three under twenty years of age, all died.
Of the fifty-three between twenty to thirty years of age,

- 29, or 54.7% are tabled as much improved.
- 6, or 11.3 are tabled as somewhat improved.
- 5, or 9.4 are tabled as worse.
- 13, or 24.5 are tabled as dead.

Of the thirty-two, ranging from thirty to forty years of age,

- 14, or 43.8% are tabled as much improved.
- 11, or 34.4 are tabled as somewhat improved.
- 2, or 6.2 are tabled as worse.
- 5, or 15.6 are tabled as dead.

Of the eight ranging from forty to fifty years of age,

- 5, or 62.5% are tabled as much improved.
- 1, or 12.5 is tabled as somewhat improved.
- 2, or 25 are tabled as dead.

Of the four ranging from fifty to fifty-five years of age,

- 2, or 50% are tabled as much improved.
- 1, or 25 is tabled as somewhat improved.
- 1, or 25 is tabled as dead.

All of which goes to show that the chances for doing well are better when the patient is over thirty years of age. This, however, is not at all due to the

influence of climate, as a comparison of my results with those of Dr. Williams will show, for he writes :

"The influence of age and sex on the duration of consumption may be thus summed up :

"(1) The duration is longer in proportion as the age of the attack is later, the retarding influence of age being more conspicuous among males than females.

"(2) Among the females the time of the attack is on an average, earlier than among males.

"(3) The duration of the disease is shorter.

"(4) The age reached by the consumptive females is less."

Following out these suggestions, I find that in my table of deaths the average duration of life among the females after coming to Colorado was only 6.5 months, while with the men the average was 15.7 months; that with the females three were twenty years and under of age, while the same was true of only one man. It would seem from this, therefore, that the general law, as stated by Dr. Williams, is not varied much by the climate of Colorado, and that where a fatal result ensues, the duration of the disease is shorter in the female than in the male.

Heredity. — Fifty-two of the one hundred cases report some lung trouble in the family, distributed as follows,

One or both parents affected	25
One or both grandparents affected	7
Uncles or aunts affected	7
Brothers or sisters affected	13

52

Of the twenty-five whose parents were affected,

10, or 40% were much benefited by coming to Colorado.

8, or 32 were somewhat benefited by coming to Colorado.

1, or 4 was made worse by coming to Colorado.

6, or 24 died after coming to Colorado.

Of those affected through grandparents,

5, or 71.4% were much benefited by coming.
 1, or 14.3 was somewhat benefited by coming.
 1, or 14.3 died.

The same figures and ratios hold true when the inheritance was less direct, that is, through uncles and aunts.

When brothers and sisters were affected,

3, or 23 % were much benefited by coming.
 5, or 38.5 were somewhat benefited by coming.
 5, or 38.5 died.

These figures go to show that in rather more than half of my cases there were some family predisposition (my percentage of 52 being in excess of Dr. Williams, where it was only 48.4 %) and that while, taking them as a body, 73 % were benefited by coming to Colorado, yet those did the best in whom the family predisposition was shown in grandparents, uncles and aunts, rather than in parents, brothers and sisters.

Hæmorrhage. — It has often been urged that high altitudes are not adapted to hæmorrhagic cases, and that, therefore, persons suffering with hæmorrhages should not come to Colorado. Let us see what lessons can be gleaned from my tables.

I find that there were forty-four cases who had had hæmorrhages, more or less severe, and more or less numerous. Of these forty-four cases I find that eleven or 25% had a recurrence of hæmorrhage in Colorado, which certainly does not uphold the statement, so often made, that this altitude is conducive to hæmorrhage. Two patients who never had hæmorrhage before coming here, had some in Colorado, and one died from the effects of it. In these cases, however, the cause was due to unusual exertion, and, indeed, many of the cases of recurrence can be traced to immoderate exercise. Of the forty-four hæmorrhagic cases I find that,

26, or 59.1% were much benefited here.

7, or 15.9 were somewhat benefited here.

2, or 4.6 were made worse.

9, or 20.4 died.

That is, 75% were benefited, and 25% grew worse or died. This certainly does not uphold the idea that Colorado is not good for hæmorrhagic cases: it goes to prove, very decidedly, the direct contrary, that such cases do admirably here.

Appetite, Digestion and Bowels.—These elements I have regarded as of the greatest importance in estimating the probabilities of my cases when they first come to me; and, taken with the indications furnished by the temperature, pulse and their ability to sleep, aid to form my prognosis quite as much as does the condition of the chest. For I have seen patients with consolidation, night sweats, constant cough and profuse expectoration, accompanied by loss of strength and flesh, and it may be with hæmorrhages, do admirably because they could eat, digest and sleep, whereas I have also seen others similarly affected go down rapidly because they could not eat nor digest what they had eaten, nor yet sleep. The following cases, though not filling all the requirements, will nevertheless serve as fitting examples of what I mean.

Miss —, a maiden lady, about thirty-five years of age, consulted me August 15, 1887. Her mother died of consumption at forty. A year previous to consulting me my patient caught cold, and in January, 1887, this was followed by night sweats, never had any hæmorrhage, but once or twice had spat a little blood. She had lost flesh, fifteen pounds from her average. She had a dry cough, accompanied by little or no expectoration. Her digestion was very bad, her appetite fair, bowels regular, and she slept poorly. The left apex was slightly dull, expiration was prolonged, and a few clicks were developed on cough. Pulse, 120;

temperature, 100°. This lady ran down rapidly, and in six months she was in her grave.

A couple of months later, namely, October 25, 1887, I was consulted by a man with the following history:

Dr. M—, age forty-three. Mother had consumption. Had pneumonia in spring of 1887, and coughed pretty constantly afterward. In August he had four copious hæmorrhages. When I saw him he had fallen off twelve pounds from his usual weight, and was expectorating a whitish mucus in moderate quantities. His appetite and digestion were first class, bowels regular, and the physical signs in his chest were identical with those described in the foregoing case. His pulse was 88, and temperature 100°. He exercised the utmost caution in regard to himself, and in the following May I allowed him to return East for the summer. Immediately on his reaching Boston he consulted one of the best specialists in this department in this country, who was fully informed in regard to his case, and he was told as I had told him, that there was a little dry crumpling at his left apex, probably pleuritic. This past winter he returned to Colorado again, more as a means of prevention than for any other reason, and to-day he is back at his work as nearly "well," I think, as it is possible for any one to be who has ever had serious lung trouble. In these two cases, which consulted me at about the same time, there were nearly identical conditions, as regards heredity and the lungs, existing when they came to me. The climate could work upon the one, for he had recuperative power. The other did not have. Her digestion was impaired, her appetite gone, and she was of a nervous type, and so she succumbed rapidly.

The citation of these two cases will probably illustrate my meaning better than figures could do. However, I am supported by the facts, for I find that, with only two or three exceptions, in every one of the fifty

cases which I have classed as "much improved," the digestion and appetite are classed as "good," and bowels "regular," whereas of the twenty-six who "died," I find that the appetite and digestion were bad in sixteen, and in some of these cases the appetite was entirely gone, and in ten of the twenty-six the bowels are classed as constipated, loose or irregular.

Pulse and Temperature.—I need only adduce my figures in support of my previous assertion with reference to these factors as elements in prognosis. A rapid pulse and high temperature, especially when combined with an impaired digestion and appetite, are unfavorable symptoms.

Of the twenty-six deaths, I find that, at the date of consulting me, fifteen had a pulse beating at from 100-120-130, and a temperature ranging from 100° - 102° - 103.5° - 104.2° . Of the remaining eleven, I have not kept records of these factors, in four cases; but of the seven that are left the records show a pulse over 100 in three of the cases, and a temperature 99.5° to 100.5° in the remaining four.

On the other hand, in the fifty cases tabulated as "much improved," I find only seven where the pulse and temperature were each over 100° , the highest pulse being 116 and the highest temperature 101° ; of the remaining the pulse would range from 80-96, and the temperature would be normal or ranging from 99° - 100° .

Condition of the Lungs.—I approach this subject with hesitancy, because I feel, as Dr. Williams expresses it, that "the classification of the conditions of the lung, consolidation, softening and excavation, into first, second and third stages, is open to objections, because such stages are not always well-defined, it being difficult, sometimes impossible, to distinguish between the end of the second and the beginning of the third, and again, various parts of the same lung may be in diff-

erent stages." I also feel a hesitancy because I know that I have, at times, found undoubted signs, when others, whose diagnostic powers I highly respect, have failed to find them, and *vice versa* the tables have been similarly turned on me.

I prefer, therefore, to classify my cases somewhat differently, more as regards the extent of tissue involved than as regards its stages.

Where only a small portion of one lung is involved, for example, one apex, or where it may be that both apices are but slightly involved, for example, prolonged expiration at one; heightened percussion note, prolonged expiration and a few fine râles produced by cough with deep inspiration at the other; or further when the trouble, as sometimes but rarely occurs, is found in a portion at the base, such cases I prefer to classify as "having slight trouble."

Where the disease has progressed further than this, involving the whole of one lobe, or where, as frequently happens, râles are to be heard in two separate lobes, and yet softening has not taken place, I shall call such, "marked trouble."

Lastly, where the dulness has become very marked over one or more lobes, and this is accompanied by tubular breathing, marked bronchophony and râles of various sorts, even though I cannot positively diagnose cavities, as I am indeed very slow to do, I prefer to classify such cases as, "considerable trouble."

Consulting my tables, then, with reference to these distinctions, I find that of my fifty cases recorded as "much improved," the trouble could be classed as slight in thirty-four, marked in fifteen. The one remaining case consulted me four years after coming to Colorado, and I was not then able to detect any physical signs which would indicate the nature of his original trouble.

In the next class, of those "somewhat improved,"

I find four in whom the trouble was slight, thirteen in whom the trouble was marked.

In the next class, or those who are worse off than when they came, I find, that when they came, four could be classed as slight, three as marked.

And of the twenty-six who died, four could be classed as slight when examined, four as marked, and eighteen as considerable.

The conclusion to be drawn from these figures then is, that the most favorable cases for Colorado, as far as the condition of the chest is concerned, are those in the early stages, when the disease has not made much progress.

Later on, when perhaps they have reached the so-called second stage, they may be sent, with the hope of getting some improvement; but when the disease is very considerable, especially if the condition be marked by impaired appetite and digestion, and by hectic and rapid pulse, they had better be kept at home.

Complications. — I have had under observation, and included in my list, five cases of undoubted tubercular laryngitis. Of these, two have gained a recovery, one has made some little improvement, one has died, and the fifth was getting worse when I last saw him. One of my patients on this list has an empyæmic cavity on the left side, where resection of the ribs has been performed, and he is around attending to his business, without any marked inconvenience. In two cases, the fibroid condition on the left side is so marked that the heart is drawn up and to the left of the nipple; but they are doing finely, and are classed as much improved. One case was attacked with acute endocarditis, some six months after coming here: he weathered the attack, and is classed as much improved.

Five of my list, I know positively, have had syphilis. Of these, two are classed as much improved, one as somewhat improved, one as worse, and one has died.

Several of my cases have been attacked with rheumatism, typhoid fever, and other complications not pulmonary; and I have not noticed that their lungs have received any additional damage from such illnesses.

But time fails me for any closer analysis of even one hundred cases, and I must stop.

The conclusions that it seems to me can fairly be drawn from the foregoing are as follows, namely: that, taking cases as they come to us, we can expect improvement in two out of three; that men do better than women, as in fact they do anywhere; that persons over twenty years of age do better than those under twenty, and that those over thirty years of age do still better; that heredity forms no bar to a person's coming to Colorado, but that the more indirect the inheritance the better are the chances; nor should a hæmorrhagic tendency debar one from coming, as such cases do admirably well; that altitude *per se* is not a producer of hæmorrhage; that the chances of obtaining an arrest of trouble are improved by the patient's possessing a sound digestion, a good appetite and a pulse and temperature not much raised above the normal; and that patients in the early stages of the disease, especially if their digestion be sound, appetite good, and pulse and temperature nearly normal, are the fittest subjects for our climate, whether they have any hereditary tendency or not.

